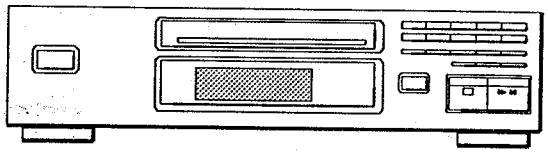
S/M Code No.91 – 059 DATE OF ISSUE 9/1991 – T

AIWA®

DX-Z92
DX-Z87

SERVICE MANUAL



COMPACT DISC PLAYER

• BASIC CD MECHANISM : KSL – 2101ABM

• TYPE. H,E,K (Z92)
Y,YK (Z87)

- ◆ DX – Z92 is the Compact Disc Player which is connected to CU – DZ92M, XS – Z85M only.
- ◆ DX – Z87 is the Compact Disc Player which is connected to CU – DZ92M, XS – Z87M,XS – Z85M only.

SPECIFICATIONS

Disc	Compact disc
Scanning method	Non contact optical scanner (semiconductor laser application)
Laser	Semiconductor laser (λ = 750-800 nm)
Rotation speed	Approx. 500 rpm – 200 rpm (CLV) Approx. 1000 rpm – 400 rpm (CLV, double speed, except K model)
Error correction	Cross Interleave, Reed Solomon code
No. of channels	2 channels
D-A conversion	16-bit linear
Wow/Flutter	Unmeasurable
Signal to noise ratio	92 dB (1 kHz, 0 dB)
Harmonic distortion	0.008% (1 kHz, 0 dB)
Low pass filter	8 times digital filter + active filter
Power consumption	DX-Z92: 12 W
Power requirements	H: 120/220/240 V AC, 50/60 Hz E, Z: 220 V AC, 50 Hz K: 240 V AC, 50 Hz
Dimensions (W×H×D)	360 × 88 × 313 mm (14 1/4 × 3 1/2 × 12 3/8 in)
Weight	DX-Z87: 2.6 kg (5.72 1b) DX-Z92H: 3.4 kg (7.48 1b) DX-Z92E,K: 3.2 kg (7.04 1b)

• Design and specifications are subject to change without notice.

AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

DISASSEMBLY INSTRUCTIONS

1. "Panel, Tray" and "CD Mechanism" Removal
(See Figure – 1,2)

1) Remove the "Cabinet, Steel".
2) ♠For AUTOMATIC operation
Press the OPEN/CLOSE button to eject the "Tray".
♠For MANUAL operation (See Figure – 1)
Insert a flat – head screwdriver into the hole at the direction of the arrow ② to eject the "Tray".
3) Remove the "Panel, Tray" in the direction of the arrow.(See Figure – 2)
4) Remove 4 connectors.(See Figure – 2)
5) Remove 5 screws (Ⓐ× 4, Ⓑ× 1) and remove the "CD Mechanism".(See Figure – 2)

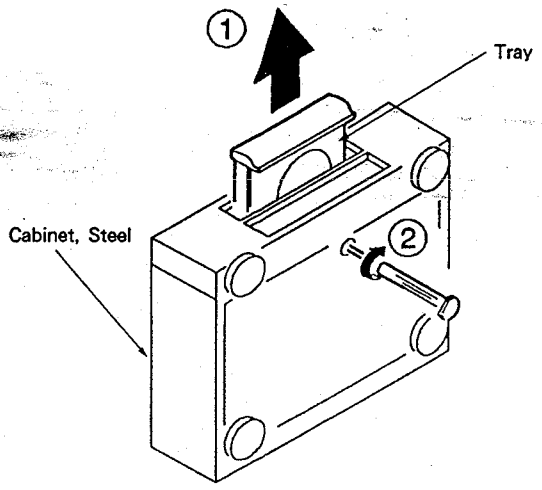


Fig – 1

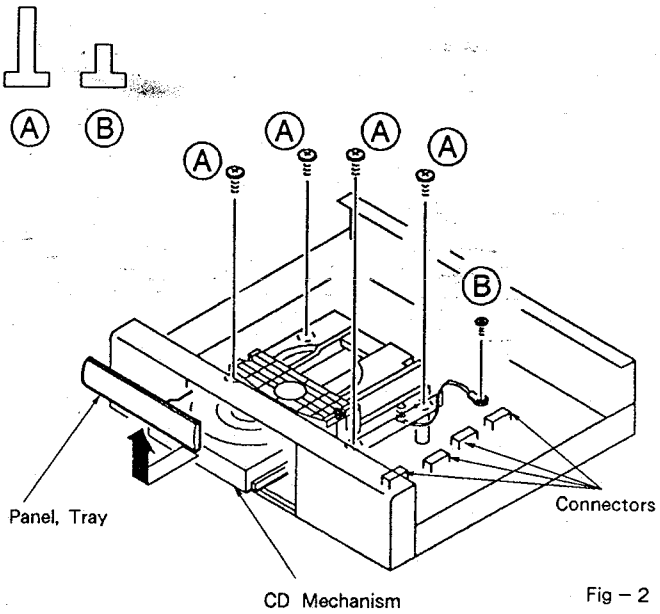


Fig – 2

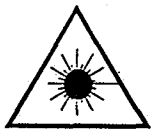
■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q,TY
	1	★81-VX1-904-019	INSTRUCTION BOOKLET EX (Z92H,Z87Y)	※	1
	2	★81-VX1-914-018	INSTRUCTION BOOKLET GW (Z92E,K,Z87YK)	※	1
	3	★87-034-773-019	CORD PIN,R – 273W – 1M (Z92)		1
	4	★87-032-845-019	PLUG,CONVERSION (Z92HJ)		1

PROTECTION OF EYES FROM LASER BEAM SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!
WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion.
  Undgå udsættelse for stråling.

VAROITUS!
Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING!
Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

CLASS 1
LASER PRODUCT

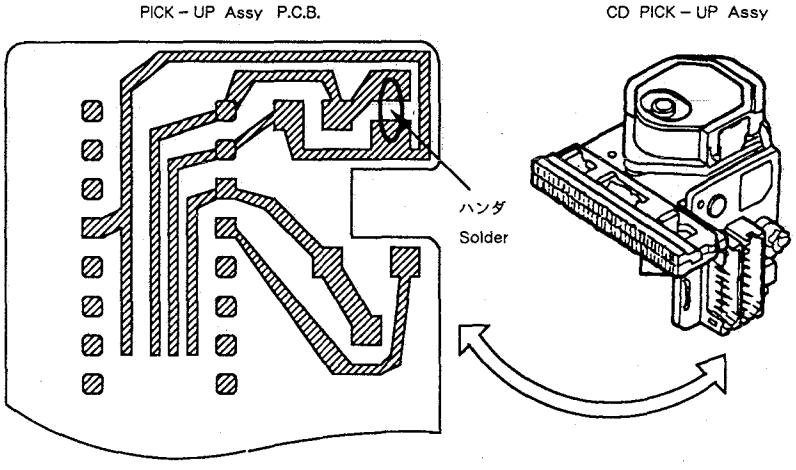
LUOKAN 1
LASERLAITE

KLASS 1
LASER APPARAT

Precaution to replace Optical block (KSS – 210A)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

1) After the connection, remove solder shown in figure below.



CAUTIONS WHEN SERVICING

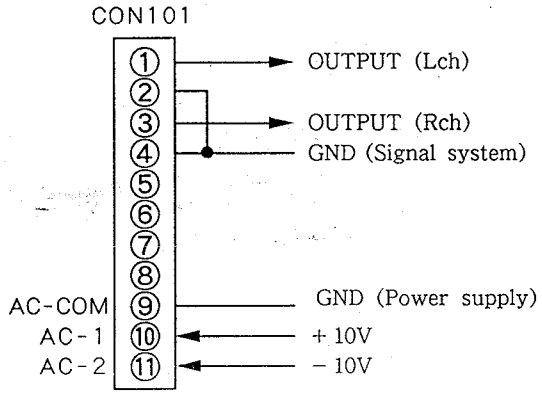
Model DX-Z87 do not have a power transformer and receive their power supplies from the cassette receiver and amplifier through a 11-pin flat cable.

When servicing the DX-Z87 connect it to the CX-Z87M/Z85M.
If the CX-Z87M/Z85M is not available, follow the precedure below.

[When servicing the unassembled DX-Z87]

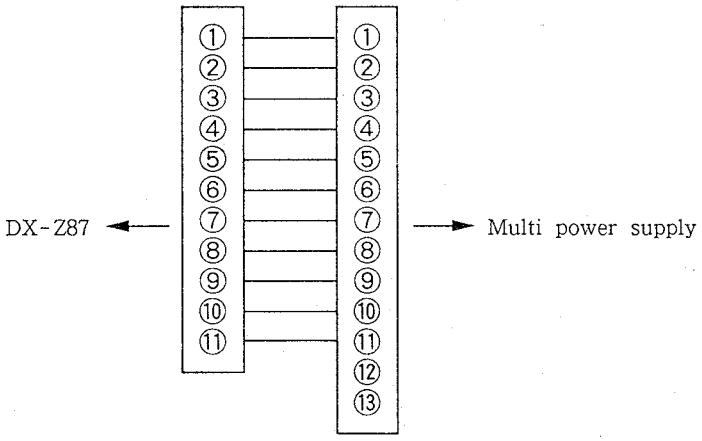
1. The voltages right diagram are suplied to each terminal from the external power source.

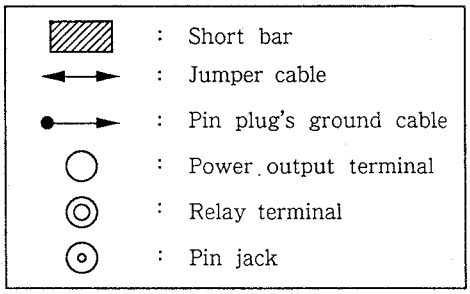
• FL dose not light, as AC power for FL is not supplied.



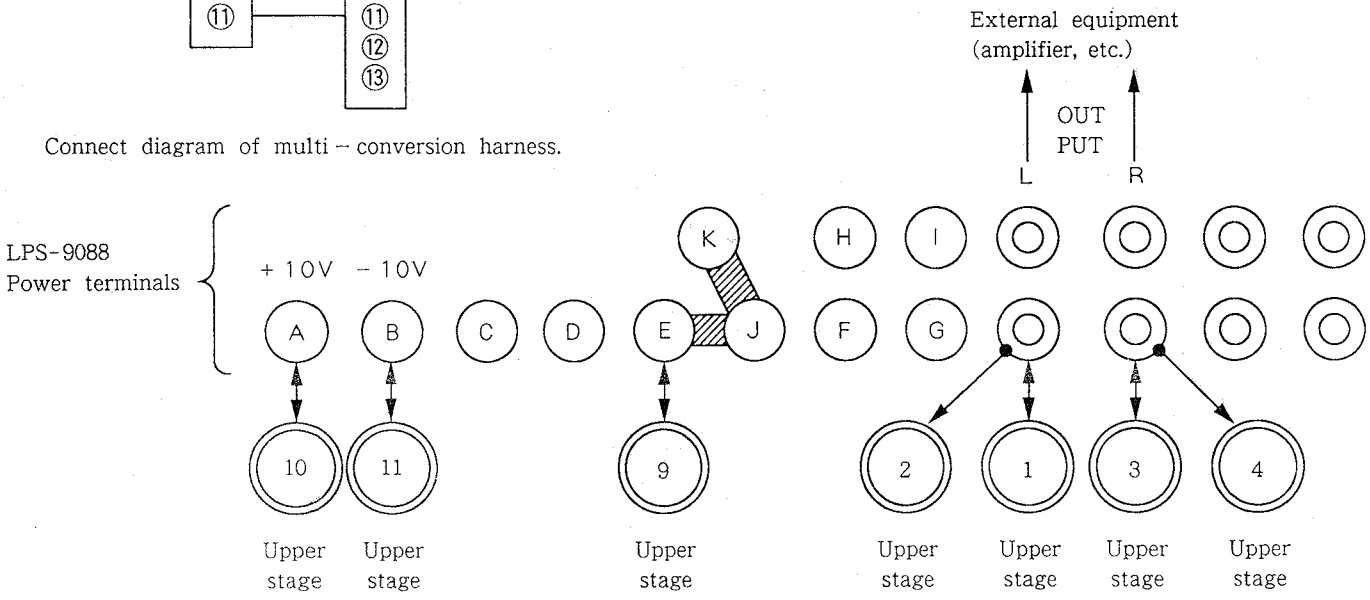
2. Multi Power Connection diagram (LPS-9088)

Connect to J1 of the LPS-9088 using a multi-conversion harness.(F550 type)





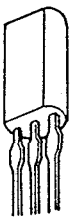
Connect diagram of multi-conversion harness.



ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
===IC===		
	87-001-440-019	IC, BA15218N
	87-001-184-010	IC, CXA1081S
	87-001-400-010	IC, CXA1082S
	87-001-944-010	IC, CXD1167Q
	81-VX1-617-010	IC, CXP50112-310Q
	87-002-211-010	IC, GP1F32T(REMOTE SENSOR)
	87-001-196-019	IC, ICP-N10
	87-001-132-019	IC, ICP-N38
	87-002-321-010	IC, L78LR05 F
	87-001-173-019	IC, LA6510
	87-020-157-010	IC, M5210L
	87-001-169-010	IC, STA341M
	87-002-448-010	IC, TC9237N
===TRANSISTOR===		
	89-110-154-019	TRANSISTOR, 2SA1015Y
	89-112-964-019	TRANSISTOR, 2SA1296Y
	89-109-521-019	TRANSISTOR, 2SA952K
	89-213-702-019	TRANSISTOR, 2SB1370E
	89-318-155-019	TRANSISTOR, 2SC1815GR
	89-320-011-019	TRANSISTOR, 2SC2001K
	89-325-002-319	TRANSISTOR, 2SC2500
	89-420-612-019	TRANSISTOR, 2SD2061E(Y2)
	87-026-219-019	TRANSISTOR, DTA144ES
	87-026-218-019	TRANSISTOR, DTC144ES
===DIODE===		
	87-027-376-019	DIODE, 1B4B41
	87-020-870-019	DIODE, 1S1585
	87-020-110-019	DIODE, 1SS177
	87-001-566-019	DIODE, ZENER HZ2B1
	87-001-914-019	DIODE, ZENER UTZJ6.2B
===MAIN CIRCUIT BOARD SECTION===		
ARY101	82-202-651-010	RES, ARRAY 4.7K×7
C1	★87-010-124-019	CAP, ELECT 4700-16V
C2	★87-015-997-019	CAP, ELECT 2200-16V SME
C3	★87-010-384-019	CAP, ELECT 100-25 SME
C4	★87-010-384-019	CAP, ELECT 100-25 SME
C5	★87-010-248-019	CAP, ELECT 220-10 SME
C6	★87-010-248-019	CAP, ELECT 220-10 SME
C7	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C101	★87-010-374-019	CAP, ELECT 47-10
C102	★87-010-544-019	CAP, ELECT 0.1-50
C103	★87-010-405-019	CAP, ELECT 10-50 SME
C104	★87-014-118-019	CAP, PP 0.015-100 G
C105	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C107	★87-014-118-019	CAP, PP 0.015-100 G
C110	★87-010-380-019	CAP, ELECT 47-16 SME
C201	★87-018-132-019	CAP, CERA-SOL U 2200P-16 X
C202	★87-010-263-019	CAP, ELECT 100-10
C204	★87-010-374-019	CAP, ELECT 47-10
C205	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C208	★87-010-374-019	CAP, ELECT 47-10
C209	★87-018-134-019	CAP, CREA-SOL U 0.01-16 Y
C210	★87-010-374-019	CAP, ELECT 47-10
C301	★87-010-374-019	CAP, ELECT 47-10
C302	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C304	★87-018-132-019	CAP, CERA-SOL U 2200P-16 X
C306	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C310	★87-010-404-019	CAP, ELECT 4.7-50 SME
C311	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C312	★87-010-374-019	CAP, ELECT 47-10
C314	★87-010-404-019	CAP, ELECT 4.7-50 SME
C315	★87-010-545-019	CAP, ELECT 0.22-50 SME
C316	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C317	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C318	★87-010-402-019	CAP, ELECT 2.2-50 SME
C318	★87-010-404-019	CAP, ELECT 4.7-50 SME(EXCEPT K)
C319	★87-018-131-019	CAP, CERA-SOL U 1000P-50 B (EXCEPT K)
C319	★87-018-133-019	CAP, CERA-SOL U 4700P-16 X(K)
C320	★87-010-382-019	CAP, ELECT 22-25 SME
C321	★87-010-401-019	CAP, ELECT 1-50 SME
C322	★87-010-374-019	CAP, ELECT 47-10
C323	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C325	★87-010-380-019	CAP, ELECT 47-16 SME
C326	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C327	★87-010-380-019	CAP, ELECT 47-16 SME
C328	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C329	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C351	★87-018-200-019	CAP, CERA-SOL U 3900P-50 B (EXCEPT K)
C401	★87-010-400-019	CAP, ELECT 0.47-50 SME
C404	★87-010-400-019	CAP, ELECT 0.47-50 SME
C405	★87-018-131-019	CAP, CERA-SOL U 1000P-50 B
C406	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C407	★87-018-109-019	CAP, CERA-SOL U 22P-50 SL
C408	★87-010-374-019	CAP, ELECT 47-10
C409	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C410	★87-010-374-019	CAP, ELECT 47-10
C411	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C451	★87-010-248-019	CAP, ELECT 220-10 SME
C452	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C453	★87-010-374-019	CAP, ELECT 47-10
C454	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C455	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C456	★87-010-263-019	CAP, ELECT 100-10
C457	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C458	★87-010-404-019	CAP, ELECT 4.7-50 SME
C459	★87-018-209-019	CAP, CERA-SOL U 0.1-50 F
C460	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C501	★87-018-117-019	CAP, CERA-SOL U 68P-50 SL
C502	★87-018-117-019	CAP, CERA-SOL U 68P-50 SL
C503	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C504	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C505	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C506	★87-018-113-019	CAP, CERA-SOL U 33P-50 SL
C509	★87-018-126-019	CAP, CERA-SOL U 390P-50 B
C510	★87-018-126-019	CAP, CERA-SOL U 390P-50 B
C511	★87-010-405-019	CAP, ELECT 10-50 SME
C512	★87-010-405-019	CAP, ELECT 10-50 SME
C551	★87-010-263-019	CAP, ELECT 100-10
C552	★87-010-263-019	CAP, ELECT 100-10
C553	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
C554	★87-018-134-019	CAP, CERA-SOL U 0.01-16 Y
FL101	80-VX1-621-010	FL, 5-BT-125G(FL DISPLAY)
⚠FR1	87-029-124-019	RES, FUSE 2.2-1/4W
⚠FR2	87-029-124-019	RES, FUSE 2.2-1/4W
⚠FR101	87-029-129-019	RES, FUSE 3.3-1/4W
⚠FR102	87-029-129-019	RES, FUSE 3.3-1/4W
J501	87-009-610-019	JACK, PIN 2P(ANALOG OUT)(Z92)
L101	★87-003-051-019	COIL, 470UH
L102	★87-003-051-019	COIL, 470UH
L201	★87-003-147-019	COIL, 22UH
L301	★87-003-147-019	COIL, 22UH
L302	★87-003-147-019	COIL, 22UH
L401	★87-003-147-019	COIL, 22UH
L402	★87-003-147-019	COIL, 22UH
L451	★87-003-147-019	COIL, 22UH
L452	★87-003-147-019	COIL, 22UH
R320	87-025-422-019	RES, MF 3.3K-1/6W F
R351	87-025-371-019	RES, MF 2.7K-1/6W F(EXCEPT K)
R406	87-025-429-019	RES, MF 47K-1/6WE

REF. NO.	PART NO.	DESCRIPTION
R407	87-025-429-019	RES, MF 47K-1/6WE
SFR201	★87-024-173-019	SFR, 22K
SFR202	★87-024-173-019	SFR, 22K
SFR301	★87-024-173-019	SFR, 22K
SFR302	★87-024-360-010	SFR, 2.2K
SFR351	★87-024-360-010	SFR, 2.2K (EXCEPT K)
SW501	87-036-254-010	SLIDE SW (ANALOG OUT) (Z92)
T101	81-692-625-019	TRANSFORMER OSC FL
X101	★87-008-394-019	RESONATOR, CERAMIC CST4.19MGW
X451	★84-733-617-019	RESONATOR, CRYSTAL 16.9344MHZ
	===SW CIRCUIT BOARD SECTION===	
SW601	87-036-142-019	TACT SW (▲ OPEN/CLOSE)
SW602	87-036-142-019	TACT SW (◀◀/⏮)
SW603	87-036-142-019	TACT SW (⏭/▶▶)
SW604	87-036-142-019	TACT SW (REPEAT/BLANK)
SW605	87-036-142-019	TACT SW (RANDOM)
SW606	87-036-142-019	TACT SW (▶‖ STOP/CLEAR)
SW607	87-036-142-019	TACT SW (■ PLAY/PAUSE)
SW608	87-036-142-019	TACT SW (PRGM/CHECK)
SW609	87-036-142-019	TACT SW (DELETE)
SW610	87-036-142-019	TACT SW (DISPLAY)
SW611	87-036-142-019	TACT SW (AUTO/AI)
SW612	87-036-142-019	TACT SW (PRGM/CONT)
SW613	87-036-142-019	TACT SW (+10)
SW614	87-036-142-019	TACT SW (6)
SW615	87-036-142-019	TACT SW (7)
SW616	87-036-142-019	TACT SW (8)
SW617	87-036-142-019	TACT SW (9)
SW618	87-036-142-019	TACT SW (0)
SW619	87-036-142-019	TACT SW (1)
SW620	87-036-142-019	TACT SW (2)
SW621	87-036-142-019	TACT SW (3)
SW622	87-036-142-019	TACT SW (4)
SW623	87-036-142-019	TACT SW (5)
	===POWER SW CIRCUIT BOARD SECTION===	
SW701	87-036-142-019	TACT SW (POWER)
	===MOTOR-1 CIRCUIT BOARD SECTION===	
M1	9X-262-513-210	SLED MOTOR ASSY (SLED)
M2	+++	SLED MOTOR ASSY (SPINDLE)
SW1	91-572-085-110	LEAF SW (INSIDE LIMIT)
	===MOTOR-2 CIRCUIT BOARD SECTION===	
M3	9X-262-511-710	MOTOR ASSY (LOADING)
SW2	91-572-086-110	LEAF SW (OPEN/CLOSE)
SW3	91-572-086-110	LEAF SW (CLOSE)
	===PT CIRCUIT BOARD SECTION (Z92 MODEL)===	
⚠PT801	81-VX3-606-019	POWER TRANSFORMER H (H)
⚠PT801	81-VX3-608-018	POWER TRANSFORMER E (E)
⚠PT801	81-VX3-609-019	POWER TRANSFORMER K (K)
	===AC VOLTAGE CIRCUIT BOARD SECTION (Z92 MODEL)===	
⚠SW901	87-036-256-019	ROTARY SW (H) (AC VOLTAGE)
	===MISCELLANEOUS===	
	98-848-127-110	OPTICAL PICK UP KSS-210A
⚠	★82-187-797-019	AC CORD E (Z92 H)
⚠	★87-034-749-019	AC CORD, H W/PLUG (Z92 HJ)
⚠	★87-034-781-018	AC CORD E (Z92 E)
⚠	★87-034-592-018	AC CORD K (Z92 K)
⚠	★87-085-185-010	BUSHING, AC CORD E (Z92 H, E, K)
⚠	★87-085-184-010	BUSHING, AC CORD D (Z92 HJ)



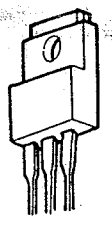
2SA1015 2SC2500

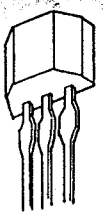
2SA1296

2SA952

2SC1815

2SC2001

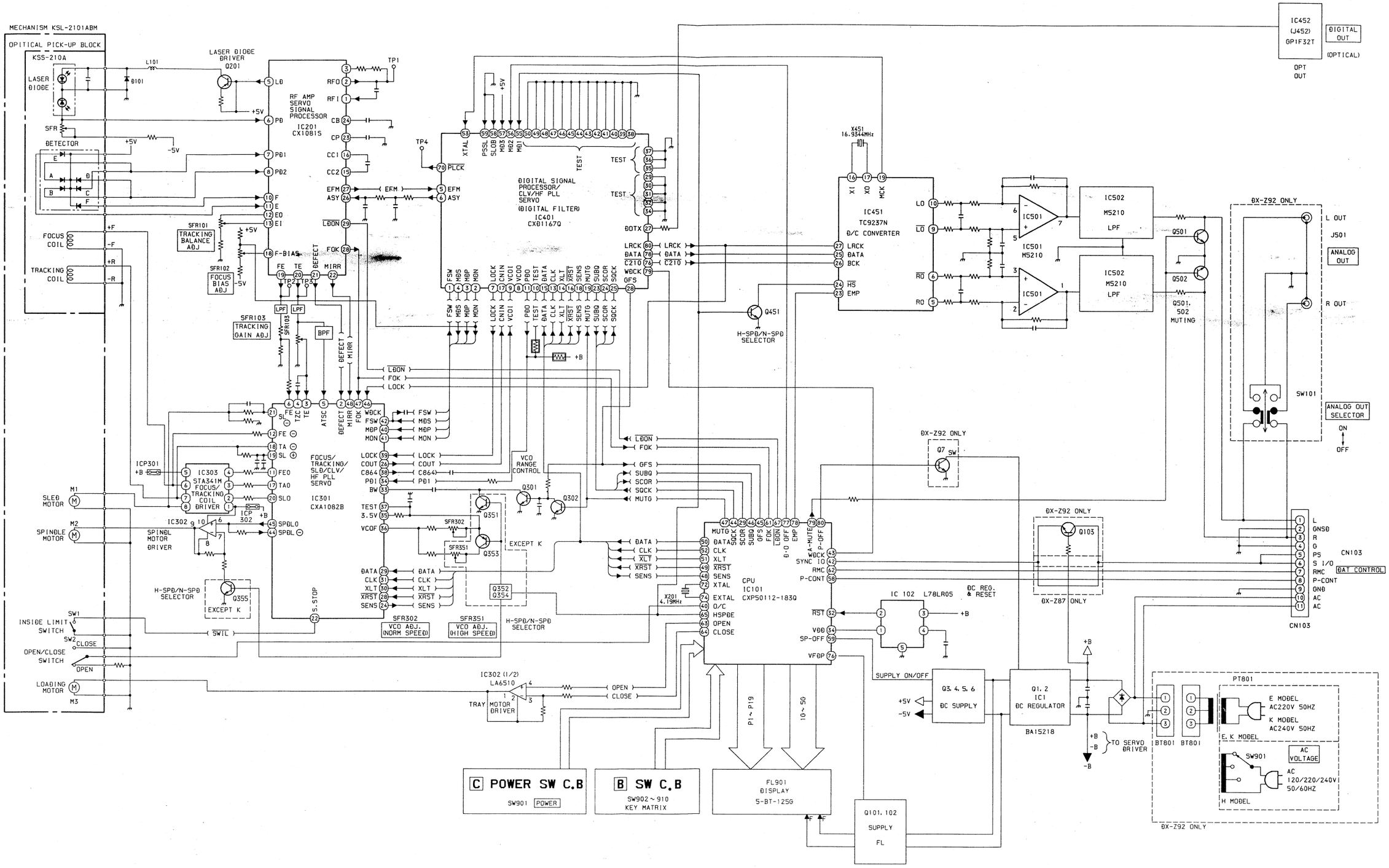


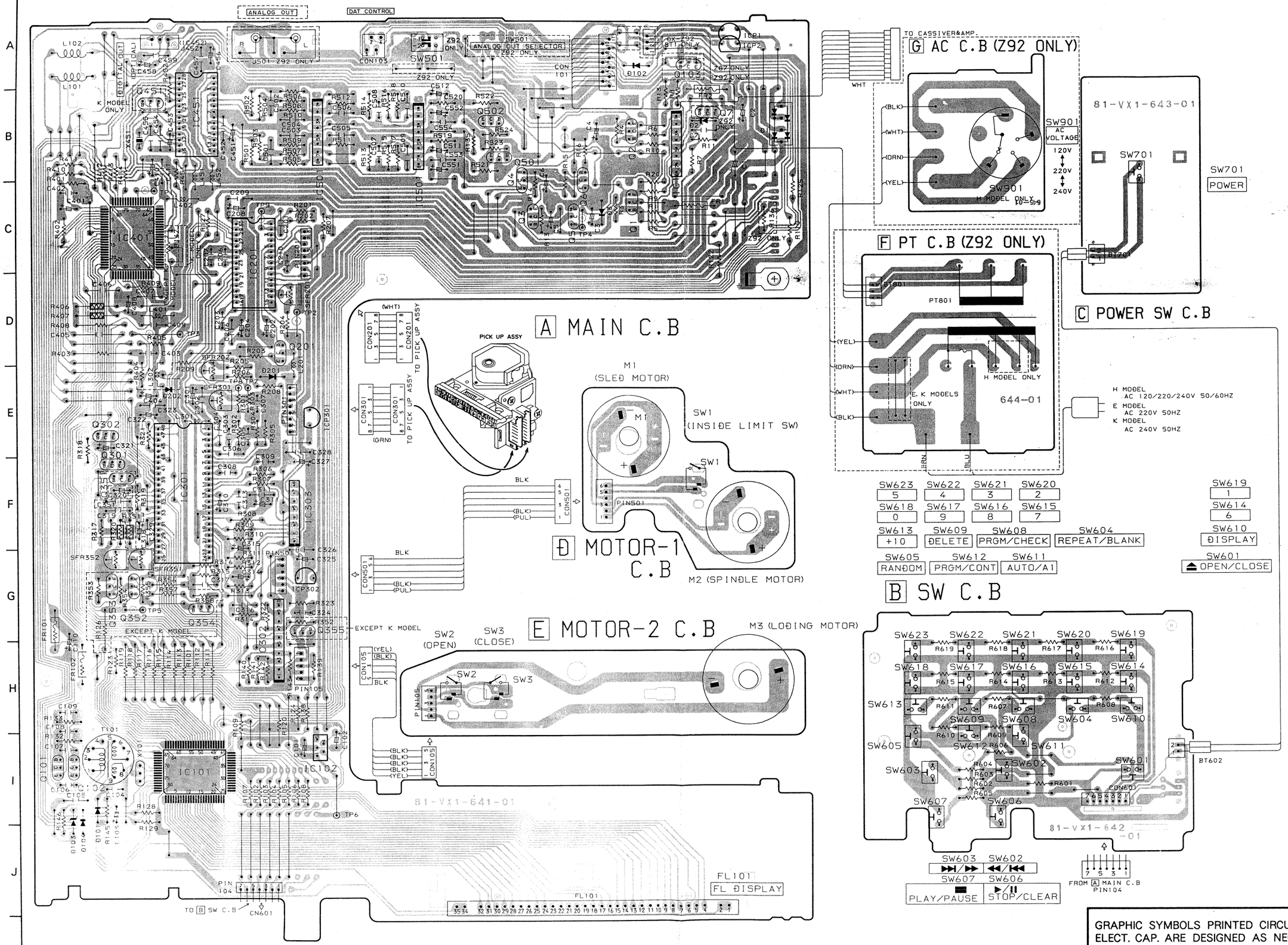


2SB1370 DTA144

2SD2061 DTC144

BLOCK DIAGRAM

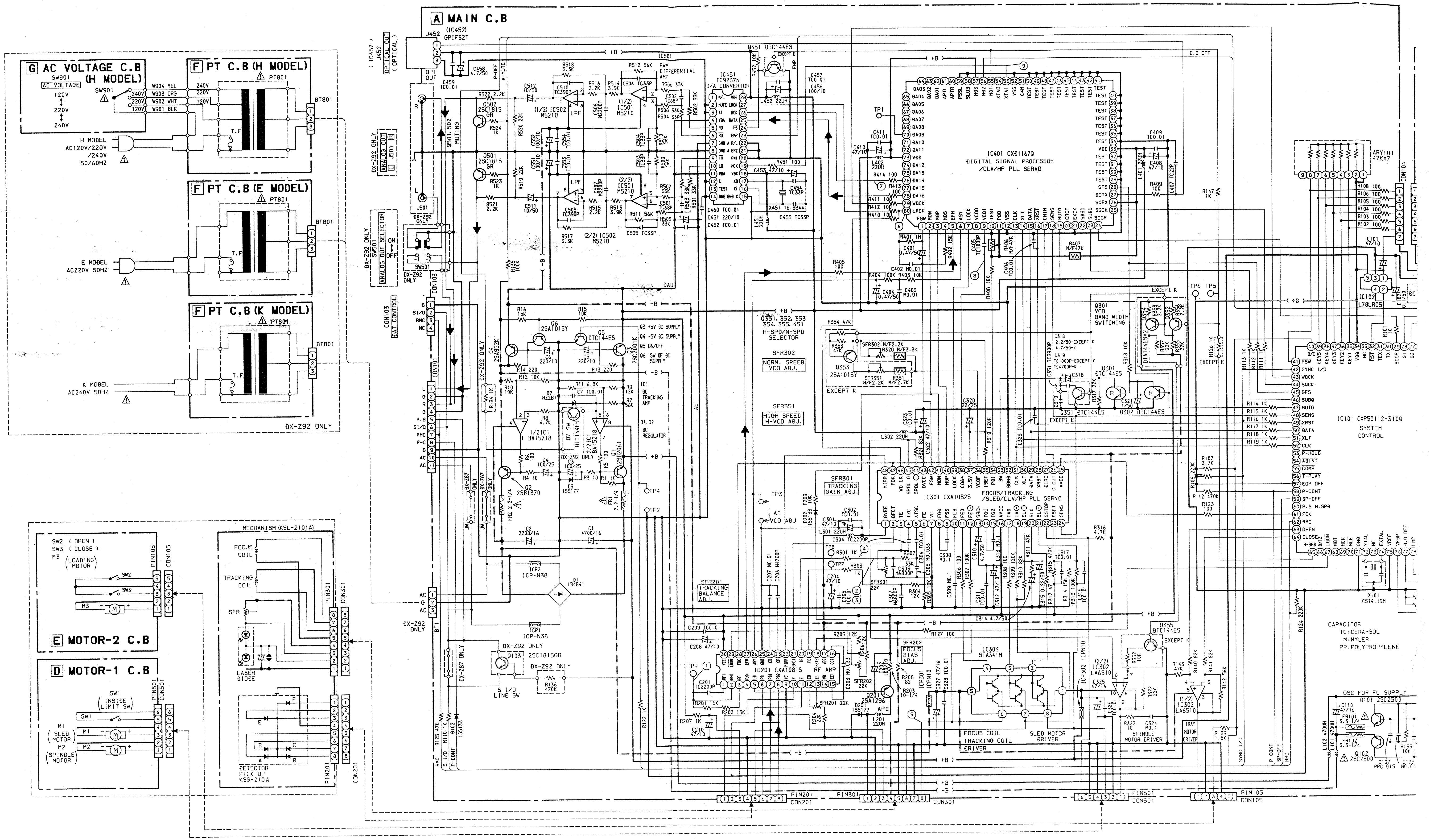




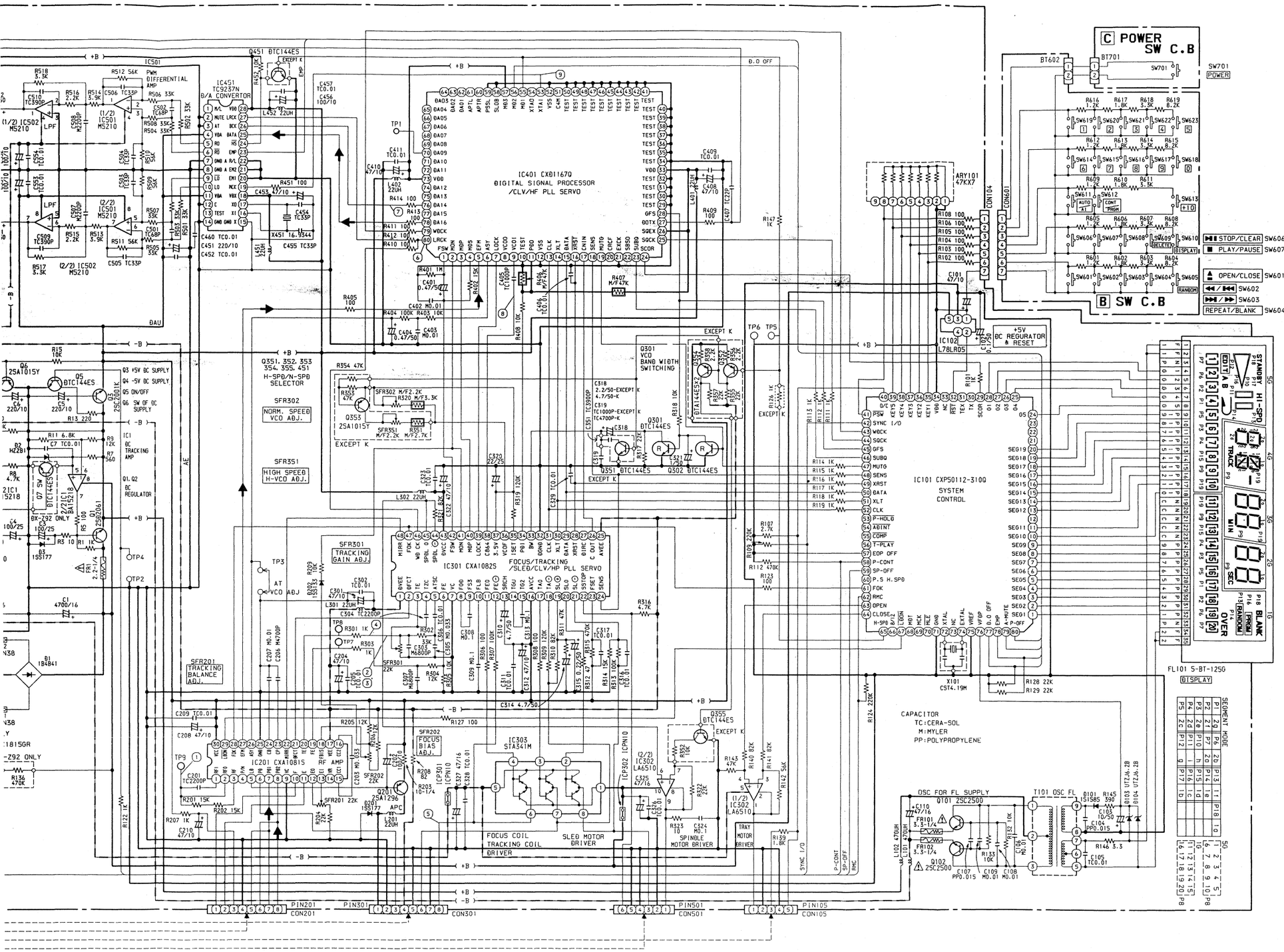
GRAPHIC SYMBOLS PRINTED CIRCUIT BOARD OF ELECT. CAP. ARE DESIGNED AS NEGATIVE POLE.

(プリント基板内のケミコンの極性表示はθ表示です。)

SCHEMATIC DIAGRAM



G AC VOLTAGE C.B (H MODEL)
F PT C.B (H MODEL)
F PT C.B (E MODEL)
F PT C.B (K MODEL)
H MODEL AC120V/220V /240V 50/60HZ
E MODEL AC220V 50HZ
K MODEL AC240V 50HZ
DX-Z92 ONLY
A MAIN C.B
IC451 TC9237N D/A CONVERTOR
IC401 CXD1167Q DIGITAL SIGNAL PROCESSOR /CLV/HF PLL SERVO
IC301 CXA1082S FOCUS/TRACKING /SLED/CLV/HP PLL SERVO
IC201 CXA1081S RF AMP
IC303 STA341M
IC101 CXP50112-310Q SYSTEM CONTROL
IC102 L78LR05
Q301 VCO BAND WIDTH SWITCHING
Q351, 352, 353 354, 355, 451 H-SPD/N-SPD SELECTOR
SFR302 NORM. SPEED VCO ADJ.
SFR351 HIGH SPEED H-VCO ADJ.
SFR301 TRACKING GAIN ADJ.
SFR201 TRACKING BALANCE ADJ.
SFR202 FOCUS BIAS ADJ.
FOCUS COIL TRACKING COIL DRIVER
SLED MOTOR DRIVER
SPINDLE MOTOR DRIVER
TRAY MOTOR DRIVER
OSC FOR FL SUPPLY
E MOTOR-2 C.B
D MOTOR-1 C.B
MECHANISM (KSL-2101A)
DETECTOR PICK UP KSS-210A
CAPACITOR TC:CERA-SOL M:MYLER PP:POLYPROPYLENE



WAVE FORM VOLTAGE

① 1.4 ± 0.1V

VP-P SHOULD BE APPROX. 1.4V.
WHEN PLAYING TRACK-2 OF YEDS-18.

② 0 — 150mV
200mV/DIV
2mS/DIV

③ AT FOCUS SEARCH
≒ 1.5 (V)

④ 0 — 500mV/DIV
1mS/DIV

⑤ (WHEN VDD ON WITHOUT DISC AND TRAY IS CLOSED.)
1V / -1V
0.6s 1.2s

⑥ 0 — 5V
88.2KHZ
2V/DIV
5US/DIV

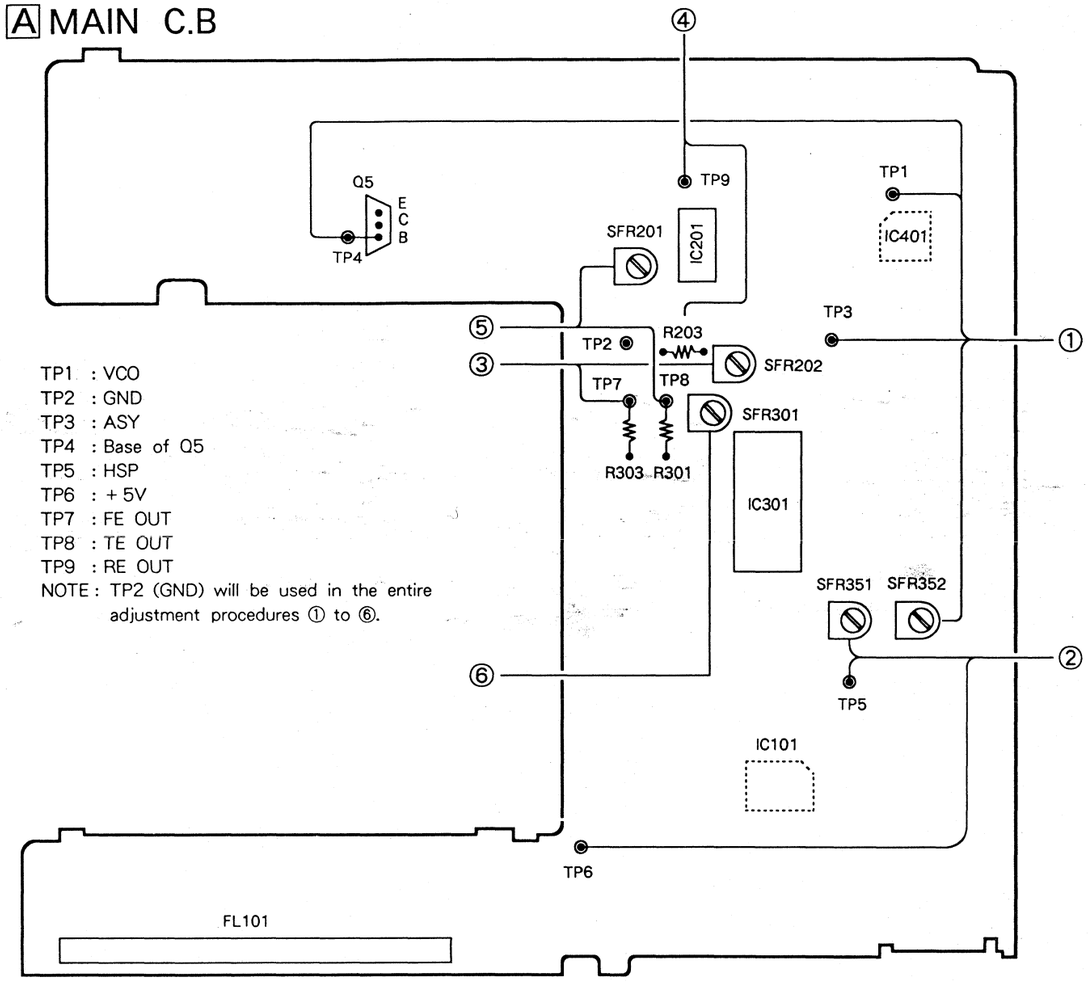
⑦ 4.5V
2.1168MHZ
2V/DIV
0.2US/DIV

⑧ 4V / 0

⑨ 2.5V 2.2V
16.9344MHZ
1V/DIV
0.1US/DIV

ADJUSTMENT

A MAIN C.B



TP1 : VCO
TP2 : GND
TP3 : ASY
TP4 : Base of Q5
TP5 : HSP
TP6 : + 5V
TP7 : FE OUT
TP8 : TE OUT
TP9 : RE OUT
NOTE : TP2 (GND) will be used in the entire adjustment procedures ① to ⑥.

Note : Connect a probe (10 : 1) of the frequency counter or the oscilloscope to a test point.

① Normal Speed VCO Frequency Adjustment

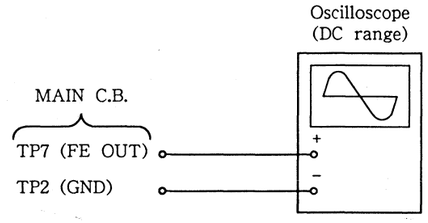
1. Connect and short between TP3 (ASY) and TP2 (GND).
2. Connect and short between TP3 (ASY) and TP4 (GND).
3. Connect the frequency counter to test points TP1 (VCO) and TP2 (GND).
4. Adjust SFR302 (VCO) so that the frequency counter reading is 4.20 ± 0.05 MHz.
5. After the adjustment is completed, remove the short lead wires from TP2 (GND), TP3 (ASY) and TP4 (Base of Q4).

② High Speed VCO Frequency Adjustment (Except K)

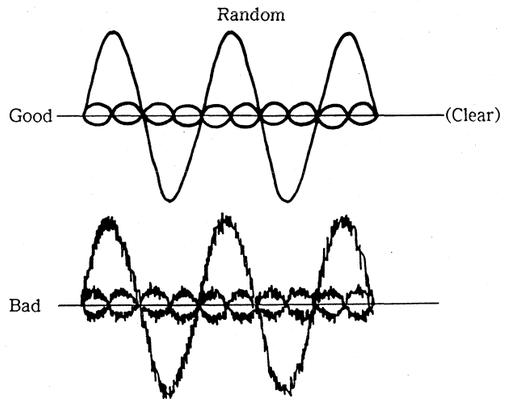
1. Connect and short between TP3 (ASY) and TP2 (GND). Also, connect and short between TP4 (Base of Q5) and TP2 (GND).
2. Connect between TP5 (HSP) and TP6 (+5V).
3. Connect the frequency counter to TP1 (VCO) and TP2 (GND).
4. Adjust SFR351 so that the frequency counter reading is 8.85 ± 0.02 MHz.
5. After the adjustment is completed, turn off the power.
6. After the high speed adjustment is completed, check that the frequency adjusted in the normal speed is correct.
7. After this adjustment, remove the short lead wires from TP2 (GND), TP3 (ASY), TP4 (Base of Q5) and TP6 (+5V).

③ Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.



1. Connect an oscilloscope to test points TP7 (FE OUT) and TP2 (GND).
2. Turn on the power switch.
3. Insert test disc YEDS-18 (YEDS-1) and play back the second composition.
4. Adjust SFR202 so that the noise (high frequency) of test point TP7 (FE OUT) is minimized.

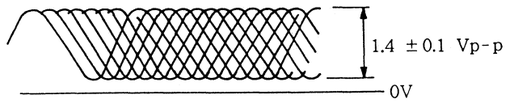


④ RF Waveform Check

This check should be performed whenever the optical system block is replaced in repair.

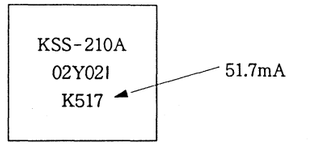
1. Connect an oscilloscope to test points TP9 (RF OUT) and TP2 (GND).
2. Turn on the power switch.
3. Insert test disc YEDS-18 (YEDS-1) and play back the second composition.
4. Check that the waveform appears as shown in the figure below.

RF signal waveform



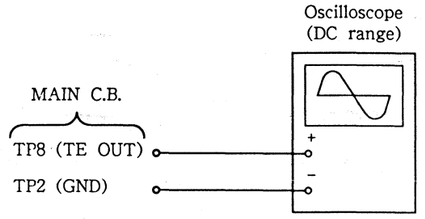
VOLT/DIV : 50 mV
TIME/DIV : 1mS

Note : The current of the laser signal can be checked with the voltages on both sides of R203 (10 Ω). The difference for the specified value shown on the label must be within ± 6.0 mA.

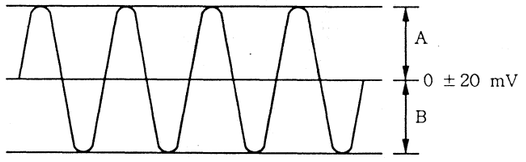


$$\text{Laser current Iop} = \frac{\text{Voltage across R203}}{10\,\Omega}$$

⑤ Tracking Balance Adjustment



1. Connect an oscilloscope to test points TP8 (TE OUT) and TP2 (GND).
2. Turn SFR301 on the main board counterclockwise fully so that the setting is minimized.
3. Turn on the power switch.
4. Insert test disc YEDS-18 (YEDS-1) and press the PLAY (▶) button.
5. Adjust SFR201 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
6. After the adjustment is completed, remove the ground lead wires from the terminals.



A = B

VOLT/DIV : 50 mV
TIME/DIV : 1 mS

⑥ Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment. Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these gains are reciprocated, the adjustment is performed sc that both gains are satisfied.

- When gain is raised, the noise increases when the 2-axis device operates.
- When gain is lowered, it is more susceptible tc mechanical shock and skipping occurs more easily.

When the gain adjustment is not satisfied, the symptoms below appear.

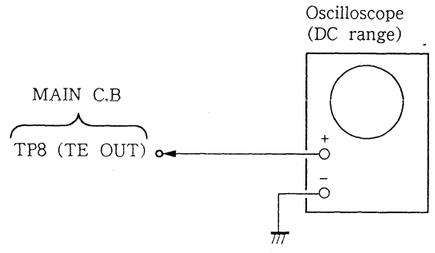
Gain / Symptoms	(Focus)	Tracking
● The time until music starts becomes longer for STOP→▶ PLAY or automatic selection (⏮, ⏭ buttons pressed.) (Normally takes about 2 seconds.)	low	low or high
● Music does not start and disc continues to rotate for STOP →▶ PLAY or automatic selection (⏮, ⏭ buttons pressed.)	–	low
● Disc stops to rotate shortly after STOP→▶PLAY.	low or high	–
● Sound is interrupted during PLAY. Or time counter display stops.	–	low
● More noises during the 2-axis device operation.	high	high

The following is simple adjustment method.

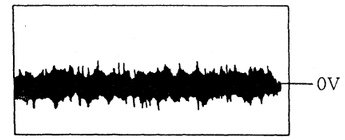
– Simple adjustment –

Note : Since the adjustment cannot be performed exactly, remember the positions of the controls before the adjustment and compare the adjusted position and the original position.
If the difference is a little, return the control to the original position.

Procedure :



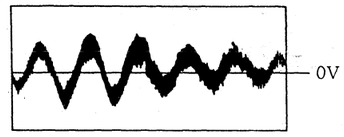
1. Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
2. Insert test disc YEDS-18 (YEDS-1) and play back the second composition.
3. Connect an oscilloscope to TP8 (TE OUT) of the main board.
4. Adjust SFR301 so that the waveform appears as shown in the figure below. (tracking gain adjustment)



VOLT/DIV : 50 mV
TIME/DIV : 1 mS

● Incorrect example (The fundamental wave appears as compared with the waveform adjusted.)

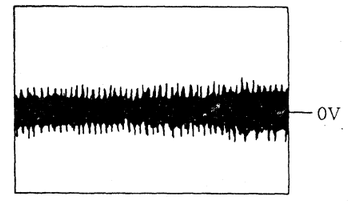
Low tracking gain



VOLT/DIV : 50 mV
TIME/DIV : 1 mS

High tracking gain

The frequency of the fundamental wave is higher than that in low gain.



VOLT/DIV : 50 mV
TIME/DIV : 1 mS

IC DESCRIPTION

IC,TC9237N

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>M/L</td><td>I</td><td>MSB First/LSB First select terminal for input data. "H" when MSB First. "L" when LSB First.</td></tr>
<tr><td>2</td><td>MUTE</td><td>I</td><td>Muting terminal. "H" when muting output signal.</td></tr>
<tr><td>3</td><td>AT</td><td>I</td><td>Attenuator control terminal. "H" when -3dB. "L" when 0dB.</td></tr>
<tr><td>4</td><td>VDA</td><td>—</td><td>DA converter power supply terminal. (R channel)</td></tr>
<tr><td>5</td><td>RO</td><td>O</td><td>R channel data output terminal.</td></tr>
<tr><td>6</td><td>$\overline{RO}$</td><td>O</td><td>R channel data output terminal.</td></tr>
<tr><td>7</td><td>GNDA</td><td>—</td><td>DA converter GND terminal. (R channel)</td></tr>
<tr><td>8</td><td>GNDA</td><td>—</td><td>DA converter GND terminal. (L channel)</td></tr>
<tr><td>9</td><td>$\overline{LO}$</td><td>O</td><td>L channel data output terminal.</td></tr>
<tr><td>10</td><td>LO</td><td>O</td><td>L channel data output terminal.</td></tr>
<tr><td>11</td><td>VDA</td><td>—</td><td>DA converter power supply terminal. (L channel)</td></tr>
<tr><td>12</td><td>C</td><td>I</td><td>TEST terminal. Normally set to "L" for use.</td></tr>
<tr><td>13</td><td>TEST</td><td>I</td><td>TEST terminal. Normally set to "H" or OPEN for use.</td></tr>
<tr><td>14</td><td>GND</td><td>—</td><td>Logic GND terminal.</td></tr>
<tr><td>15</td><td>GNDX</td><td>—</td><td>Oscillator output GND terminal.</td></tr>
<tr><td>16</td><td>XI</td><td>I</td><td rowspan="2">Crystal oscillator connection terminal. Generates the necessary system clock when the crystal oscillator is connected. 384fs.</td></tr>
<tr><td>17</td><td>XO</td><td>O</td></tr>
<tr><td>18</td><td>VDX</td><td>—</td><td>Oscillator output power supply terminal.</td></tr>
<tr><td>19</td><td>MCK</td><td>O</td><td>System clock output terminal. 384 fs.</td></tr>
<tr><td>20</td><td>EM1</td><td>I</td><td rowspan="2">De-emphasis filter 44.1 kHz/32 kHz/48 kHz mode select terminal. Mode
<table>
<tr><td>EM1</td><td>L</td><td>L</td><td>H</td><td>H</td></tr>
<tr><td>EM2</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>MODE</td><td colspan="2">44.1KHz</td><td>32KHz</td><td>48KHz</td></tr>
</table></td></tr>
<tr><td>21</td><td>EM2</td><td>I</td></tr>
<tr><td>22</td><td>R/L</td><td>I</td><td>R/L select terminal. R channel data when "H" and L channel data input when "L" during "H" as LRCK signal. L channel data when "H" and R channel data input when "L" during "L" as LRCK signal.</td></tr>
<tr><td>23</td><td>EMP</td><td>I</td><td>De-emphasis filter ON/OFF select terminal. "H" when ON. "L" when OFF.</td></tr>
<tr><td>24</td><td>$\overline{HS}$</td><td>I</td><td>Normal/High speed mode select terminal. "H" when Normal speed mode. "L" when High speed mode.</td></tr>
<tr><td>25</td><td>DATA</td><td>I</td><td>Data input terminal.</td></tr>
<tr><td>26</td><td>BCK</td><td>I</td><td>Bit clock input terminal.</td></tr>
<tr><td>27</td><td>LRCK</td><td>I</td><td>LR clock input terminal.</td></tr>
<tr><td>28</td><td>VDD</td><td>—</td><td>Logic power supply terminal.</td></tr>
</table>

IC,CXP50112 – 310Q

Pin No.	Pin Name	I/O	Description
1 ~ 20	SEG1 ~ SEG19	O	Display segment output terminal (Pin 12 is not used.)
21	——	—	Not used.
22	——	—	
23	G6	O	Not used.
24 ~ 28	G5 ~ G1	O	Display grid scan output terminal.
29	SCOR	I	Interrupts at rising edge of subcodes S0 + S1 input.
30	TX	—	Not used.
31	TEX	—	Not used.
32	$\overline{\text{RESET}}$	I	Reset input terminal.
33	——	—	Not used.
34	VDD	I	Power supply input terminal.
35 ~ 39	KEY1 ~ KEY5	I	KEY input terminal.
40	O/C	I	Tray open/close input terminal.
41	$\overline{\text{P. SW}}$	I	Power switch input terminal: ON/OFF (STAND BY) selection.
42	SYNC I/O	I/O	Synchronizing signal input/output terminal with external equipment. (8-bit serial)
43	WDCK	I	Word clock signal input terminal.
44	SQCK	I	Subcode Q reading clock input terminal.
45	GFS		Signal input terminal to indicate the lock state of frame-synchronizing.
46	SUBQ		Subcode Q input terminal.
47	MUTG	O	Muting output terminal to CXD1167Q.
48	SENS	I	Connects to SENSE terminal of CXD1167Q.
49	XRST	O	System reset output terminal.
50	DATA		Serial data output terminal to CXD1167Q.
51	XLT	O	Data latch output terminal.
52	CLK		Data transmission clock.
53	$\overline{\text{P. HOLD}}$		Indicates peak search operation. "H" output during peak searching. (Not used)
54	$\overline{\text{ADINT}}$		Output terminal of A/D conversion circuit initial and A/D START pulse. (Not used)
55	$\overline{\text{COMP}}$	I	A/D conversion timing signal input terminal. (Not used)
56	$\overline{\text{T-PLAY}}$		Timer play mode switch input terminal. Timer play in "L". (Not used)
57	E OP. OFF		Easy operation. OFF in "H" (Connected to VDD.) (Note 1)
58	P-CONT		Power control input. OFF→ON when "H" input. ON→OFF when "L" input.
59	SP-OFF	O	"H" output when DSP, SSP, or RF amplifier is off.
60	P.S H-SPD		"H" output in peak searching. (Not used.)

Pin No.	Pin Name	I/O	Description
61	FOK	I	"H" input when focus to indicate a state of focus is correct.
62	RMC	I	42-bit serial remote control input terminal.
63	OPEN	O	"H" output in tray open output open mode.
64	CLOSE		"H" output in tray close output close mode.
65	H. SPD		"H" output in the high speed mode.
66	8/12		"H" output when a disc's operation time is 23 minutes or less is used. (Not used.)
67	$\overline{\text{LDON}}$	O	"L" output when ON/OFF output terminal of laser diode is ON.
68	MDT		Mode data output terminal
69	MCK		Mode clock output terminal
70	$\overline{\text{MLE}}$		Mode latch output terminal
71	GND	—	GND terminal
72	XTAL	O	Ceramic oscillator connection 4.19 MHz
73	-	—	Not used.
74	EXTAL	I	Ceramic oscillation connection 4.19 MHz
75	VREF	—	Connected to GND.
76	VFDP	—	Power supply input termianal for FL tube display
77	D. O OFF	O	Digital out ON/OFF control output. "H" output when OFF.
78	EMP		"H" output when emphasis is ON, indepenf of Normal/High speed mode.
79	A-MUTE		"H" output when analog mute output is ON.
80	P-OFF		"H" output when OFF.

Note 1: EOP means that a tray is opened when NO DISC is received during CD play input (from all the mode) in "EASY OPERATION". Also, it means that the tray is opened when NO DISC is received during Timer set CD input.

("All the mode" means that CD is played with a command of PLAY key input, ten key input, or PLAY with SYNC REC or FUNCTION CD input.)

IC,CXD1167Q

Pin No.	Pin Name	I/O	Description
1	FSW	O	Output to switch the time constant of the spindle motor output filter.
2	MON	O	Spindle motor on/off control output.
3	MDP	O	Spindle motor drive output. Coarse control in the CLV.S mode and phase control in the CLV.P mode.
4	MDS	O	Spindle motor drive output. Speed control in the CLV.S mode.
5	EFM	I	Inputs an EFM signal from the RF amplifier.
6	ASY	O	Output to control the slice level of the EFM signal.
7	LOCK	O	The GFS signal is sampled by the WFCK/16. When the GFS signal is "H", this pin outputs "H", and when the signal is "L" 8 times continuously, it outputs "L".
8	VCOO	O	VCO output. When this is locked to the EFM signal. f = 8.6436MHz
9	VCOI	I	VCO input.
10	TEST	—	Connected to GND. (0V)
11	PDO	O	Phase comparison output between the EFM signal and VCO/2.
12	VSS	—	Connected to GND. (0V)
13	CLK	I	Inputs a clock signal for the serial data transfer from CPU. Latches data at the rise of the clock signal.
14	XLT	I	Latch input from CPU. Latches 8-bit shift register data (serial data from CUP) to each register.
15	DATA	I	Inputs serial data from CPU.
16	$\overline{\text{XRST}}$	I	System reset input. The system is reset at "L" input.
17	CNIN	I	Tracking pulse input.
18	SENSE	O	Outputs the internal state according to the address.
19	MUTG	I	Muting input. When the ATTM in the internal register is "L", the system is in the normal state if the MUTG is "L" and the sound is muted if the MUTG is "H".
20	CRCF	O	Outputs the CRC checking result of sub-code Q. (Reserved)
21	EXCK	I	Clock input for the sub-code serial output. (Connected to GND)
22	SBSO	O	Sub-code serial output. (Reserved)
23	SUBQ	O	Sub-code Q output.
24	SCOR	O	Sub-code sync S0 + S1 output.
25	SQCK	I/O	Clock signal for reading of sub-code Q.
26	SQEX	I	SQCK select input. (Connected to +5V)
27	DOTX	O	Digital audio interface output.
28	GFS	O	Display output of the frame sync locking state. Goes "H" when locked.
29 ~ 32	TEST (DB08) ~ TEST (DB05)	—	Connected to GND. (Do not open.) Data terminal of external RAM.
33	VDD	—	Power supply (+5V)
34 ~ 37	TEST (DB04) ~ TEST (DB01)	—	Connected to GND. (Do not open.) Data terminal of the external RAM.

Pin No.	Pin Name	I/O	Description
38 〜 48	TEST (RA01) 〜 TEST (RA11)	—	Connected to GND. (Do not open.) Address output of the external RAM.
49	TEST ($\overline{\text{RAWE}}$)	—	Connected to GND.
50	TEST ($\overline{\text{RACS}}$)	—	Connected to GND.
51	C4M	O	1/2 division output of the crystal oscillator. f = 4.2336MHz(Reserved)
52	VSS	—	Connected to GND. (0V)
53	XTAI	I	Crystal oscillator input. f = 8.4672MHz
54	XTAO	O	Crystal oscillator output. f = 8.4672MHz
55	MD1	I	MD1="H" at High speed mode. The digital filter is set to OFF at all times (MD3="H"). Digital out is ON only when MD1="L" (N-SPD) and MD2="L"
56	MD2	I	
57	MD3	I	
58	SLOB	I	Input to switch the code of the audio data output. "L" causes the 2 second complement output and "H" causes the offset binary output. (Connected to GND.)
59	PSSL	I	Input to switch the mode of the audio data output. "L" causes serial output and "H" causes parallel output. (Connected to GND.)
60	APTR	O	Aperture correction control output. 44.1kHz with the filter OFF. (Reserved)
61	APTL	O	Aperture correction control output. 44.1kHz with the filter OFF. (Reserved)
62	DA01 (C1F1)	O	DA01(LSB of parallel audio data) output with PSSL = "H". C1F1 output with PSSL = "L". (Reserved)
63	DA02 (C1F2)	O	DA02 output with PSSL = "H". C1F2 output with PSSL = "L". (Reserved)
64	DA03 (C2F1)	O	DA03 output with PSSL = "H". C2F1 output with PSSL = "L". (Reserved)
65	DA04 (C2F2)	O	DA04 output with PSSL = "H". C2F2 output with PSSL = "L". (Reserved)
66	DA05 (C2FL)	O	DA05 output with PSSL = "H". C2FL output with PSSL = "L". (Reserved)
67	DA06 (C2PO)	O	DA06 output with PSSL = "H". C2PO output with PSSL = "L". (Reserved)
68	DA07 (RFCK)	O	DA07 output with PSSL = "H". RFCK output with PSSL = "L". (Reserved)
69	DA08 (WFCK)	O	DA08 output with PSSL = "H". WFCK output with PSSL = "L". (Reserved)
70	DA09 ($\overline{\text{PLCK}}$)	O	DA09 output with PSSL = "H". PLCK output with PSSL = "L". (Note 1)(Reserved)
71	DA10 (VGFS)	O	DA10 output with PSSL = "H". VGFS output with PSSL = "L". (Reserved)
72	DA11 (GTOP)	O	DA11 output with PSSL = "H". GTOP output with PSSL = "L". (Reserved)
73	VDD	—	Power supply (+5V)
74	DA12 ($\overline{\text{RA0V}}$)	O	DA12 output with PSSL = "H". RA0V output with PSSL = "L". (Reserved)
75	DA13 (C4LR)	O	DA13 output with PSSL = "H". C4LR output with PSSL = "L". (Reserved)
76	DA14 ($\overline{\text{C210}}$)	O	DA14 output with PSSL = "H". C210 output with PSSL = "L".
77	DA15 (C210)	O	DA15 output with PSSL = "H". $\overline{\text{C210}}$ output with PSSL = "L". (Note 2)(Reserved)
78	DA16 (DATA)	O	DA16(MSB of parallel audio data) output with PSSL = "H". DATA output with PSSL = "L". (Note 3)
79	WDCK	O	Strobe signal output. 88.2kHz with the filter OFF. (Reserved)
80	LRCK	O	Strobe signal output. 44.1kHz with the filter OFF.

Note 1) $\overline{\text{PLCK}}$: VCO/2 output. When locked to the EFM signal, f = 4.3218MHz
Note 2) C210: Bit clock signal. f = 2.1168MHz
Note 3) DATA: Audio signal serial data output

IC,CXA1081S

Pin No.	Pin Name	I/O	Description
1	RF1	I	The RF summing amplifier output is C-connected and input.
2	RF0	O	RF summing amplifier output. Eye pattern test point.
3	RF-	I	Inverting input of the RF summing amplifier. A feedback resistor is connected between pins 2 and 3.
4	P/N	I	Switches the input according to the polarity of the laser diode. (Not used.)
5	LD	O	Output to control the laser diode output.
6	PD	I	Connects the photo-detector which detects the laser diode output.
7	PD1	I	RF1-V amplifier (1) inverting input. Connected to PIN diode A + C for the current intput.
8	PD2	I	RF1-V amplifier (2) inverting input. Connected to PIN diode B + D for the current input.
9	VC	I	Reference voltage input within the IC. Connected to pin 14 with single power supply. Connected to the ground with the positive and negative power supply.
10	F	I	F1-V amplifier inverting input. Connected to PIN diode F for the current input.
11	E	I	E1-V amplifier inverting input. Connected to PIN diode E for the current input.
12	EO	O	E1-V amplifier output. A feedback resistor is connected.
13	E1	I	Adjusts the E1-V amplifier gain.
14	VR	O	Outputs the neutral voltage. Connected to pin 9 with the single powersupply. OPEN with positive and negative power supply. (Not used.)
15	CC1	O	Defect bottom hold (1) output. A capacitor is connected between pins 15 and 16.
16	CC2	I	The defect bottom (1) output is C-connected and input.
17	VEE	-	Grounded with the single power supply. Becomes a negative power supply with the positive and negative power supply.
18	FE BIAS	I	Inputs a bias voltage for the positive-phase input of the focus error amplifier.
19	FE	O	Focus error amplifier output.
20	TE	O	Tracking error amplifier output.
21	DEFECT	O	Defect detection output. Outputs the H" signal that detects a defect on the mirror surface.
22	MIRR	O	Mirror comparator output.
23	CP	O	A mirror hold capacitor is connected to this pin.
24	CB	O	The defect bottom hold (2) capacitor is connected to this pin.
25	DGND	-	Ground in the digital circuit.
26	ASY	I	Auto-symmetry control input.
27	EFM	O	EFM output comparator output.
28	FOK	O	Focus OK output.
29	$\overline{\text{LD ON}}$	I	Laser diode ON/OFF control input.
30	VCC	-	Positive power supply

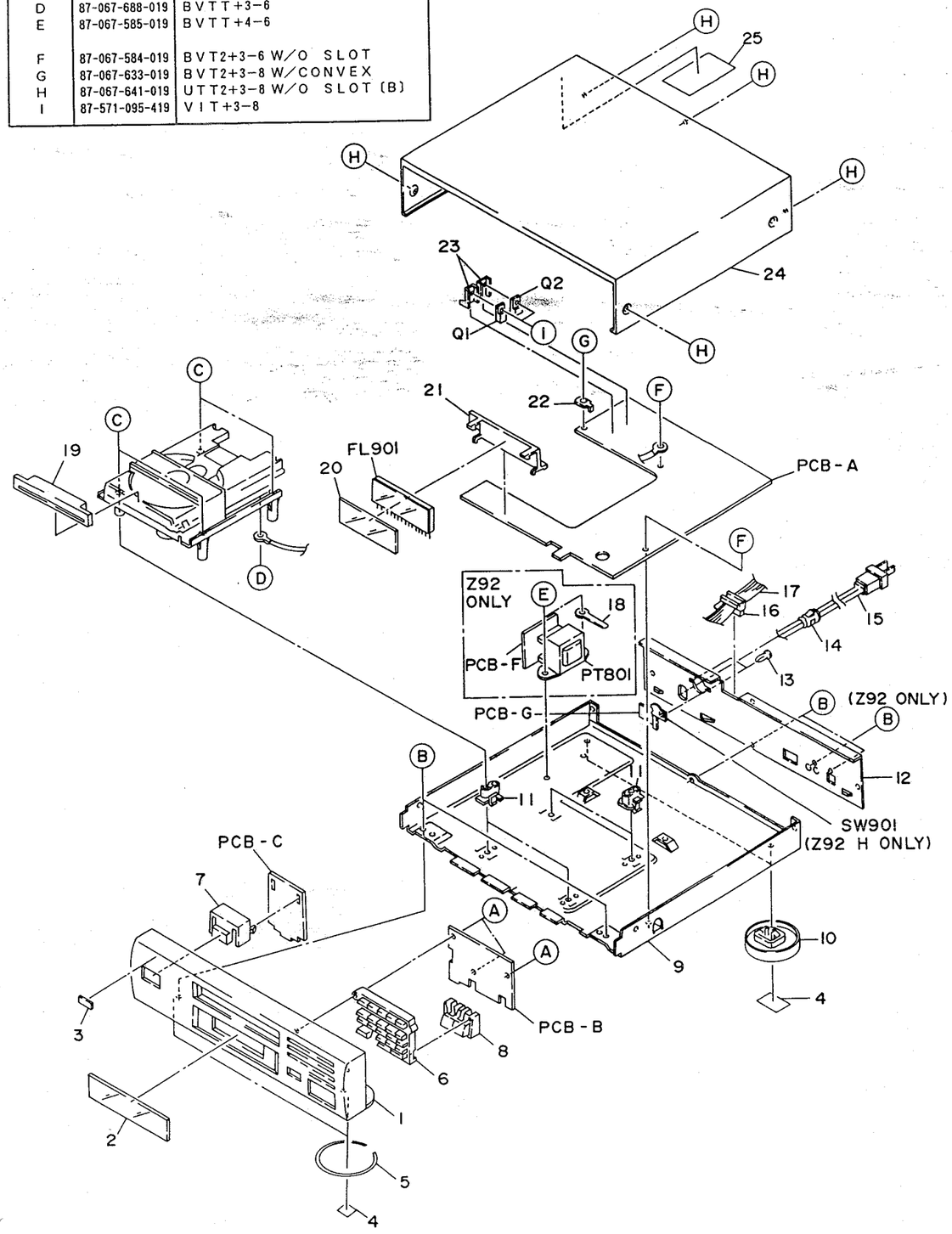
IC,CXA1082S

Pin No.	Pin Name	I/O	Description
1	DVEE	–	-5V terminal.
2	DFCT	I	Interface input terminal for microcomputer.
3	TE	I	Tracking error signal input terminal.
4	TZC	I	Tracking zero-cross comparator input terminal.
5	ATSC	I	ATSC detection window comparator input terminal.
6	FE	I	Focus error signal input terminal.
7	VC	–	Connected to GND.
8	FGD	O	Capacitor is inserted between this pin and pin 3 to decrease the focus servo's high-frequency gain.
9	FS3	I	Focus servo's high-frequency gain is selected by FS3 on/off operation.
10	FLB	O	Time-constant external terminal for raising the focus servo's low-frequency range.
11	FEO	O	Power transistor drive's operational amplifier output terminal.
12	FE–	I	Focus amplifier inversion input terminal.
13	SRCH	O	Time-constant external terminal for forming a focus search wave.
14	TG0	O	Time-constant external terminal for tracking high-frequency gain selection.
15	TG2	O	Time-constant external terminal for tracking high-frequency gain selection.
16	AVCC	–	+5V terminal.
17	TAO	O	Tracking error signal output terminal.
18	TA–	I	Tracking amplifier's inversion input terminal.
19	SL+	I	Threading amplifier's noninversion input terminal.
20	SLO	O	Threading amplifier output terminal.
21	SL–	I	Threading amplifier's inversion input terminal.
22	SSTOP	I	On/off detection signal terminal of disc's innermost detection limit switch
23	FSET	I	Terminal for setting the focus tracking's phase compensation peak and CLV LPF (f0).
24	SENS	O	Outputs IC's internal state corresponding to data address (It is changed according to address of internal serial register.)
25	AVEE	–	-5V terminal
26	C. OUT	O	Outputs signal for counting number of tracks in high-speed mode.
27	DIRCT	I	Used in one-track jump. Normally "H". "L" when track jump pulse is inversed. Consequently "H" when normal tracking mode is set. "L" in a period when the rising and falling edges of TZC are detected.
28	$\overline{\text{XRST}}$	I	"L" when all the internal register are cleared.
29	DATA	I	Serial data transmission from CPU. Input started from LSB.
30	XLT	I	"L" when data of internal serial shift register is transmitted to the latch address-decoded.
31	CLK	I	DATA transmission clock. Data is taken in at the falling edge.
32	D GND	–	GND terminal.
33	BW	I	Loop filter's time-constant external terminal.
34	PDI	I	CXD1167Q phase comparator output PDO input terminal.

Pin No.	Pin Name	I/O	Description
35	ISET	I	Passes a current to determine the focus search, tracking jump, and threading kick height.
36 37	VCOF 3.5V	I	VCO's free-running frequency is proportional to the resistance value between this pin and pin 31.
38	C864	O	8.64MHz VCO output terminal.
39	LOCK	I	Connected to the LOCK terminal of CXD1167Q.
40	MDP	I	CXD1167Q MDP connection terminal.
41	MON	I	CXD1167Q MON connection terminal.
42	FSW	I	LPF time-constant external terminal of CLV servo's error signal.
43	DVCC	—	+5V terminal
44	SPDL−	I	Spindle drive amplifier's inversion input terminal.
45	SPDLO	O	Spindle motor drive terminal.
46	WDCK	I	Word clock signal input terminal.
47	FOK	I	Focus OK signal input terminal.
48	MIRR	I	Mirror signal input terminal

EXPLODED VIEW – 1

REF. NO.	PART NO.	DESCRIPTION
A	87-067-703-019	BVT2+3-10 W/O SLOT
B	87-067-660-019	BVT2+3-8 W/O SLOT (B)
C	87-067-822-010	BVT2+3-20 W/O SLOT
D	87-067-688-019	BVTT+3-6
E	87-067-585-019	BVTT+4-6
F	87-067-584-019	BVT2+3-6 W/O SLOT
G	87-067-633-019	BVT2+3-8 W/CONVEX
H	87-067-641-019	UTT2+3-8 W/O SLOT (B)
I	87-571-095-419	VIT+3-8

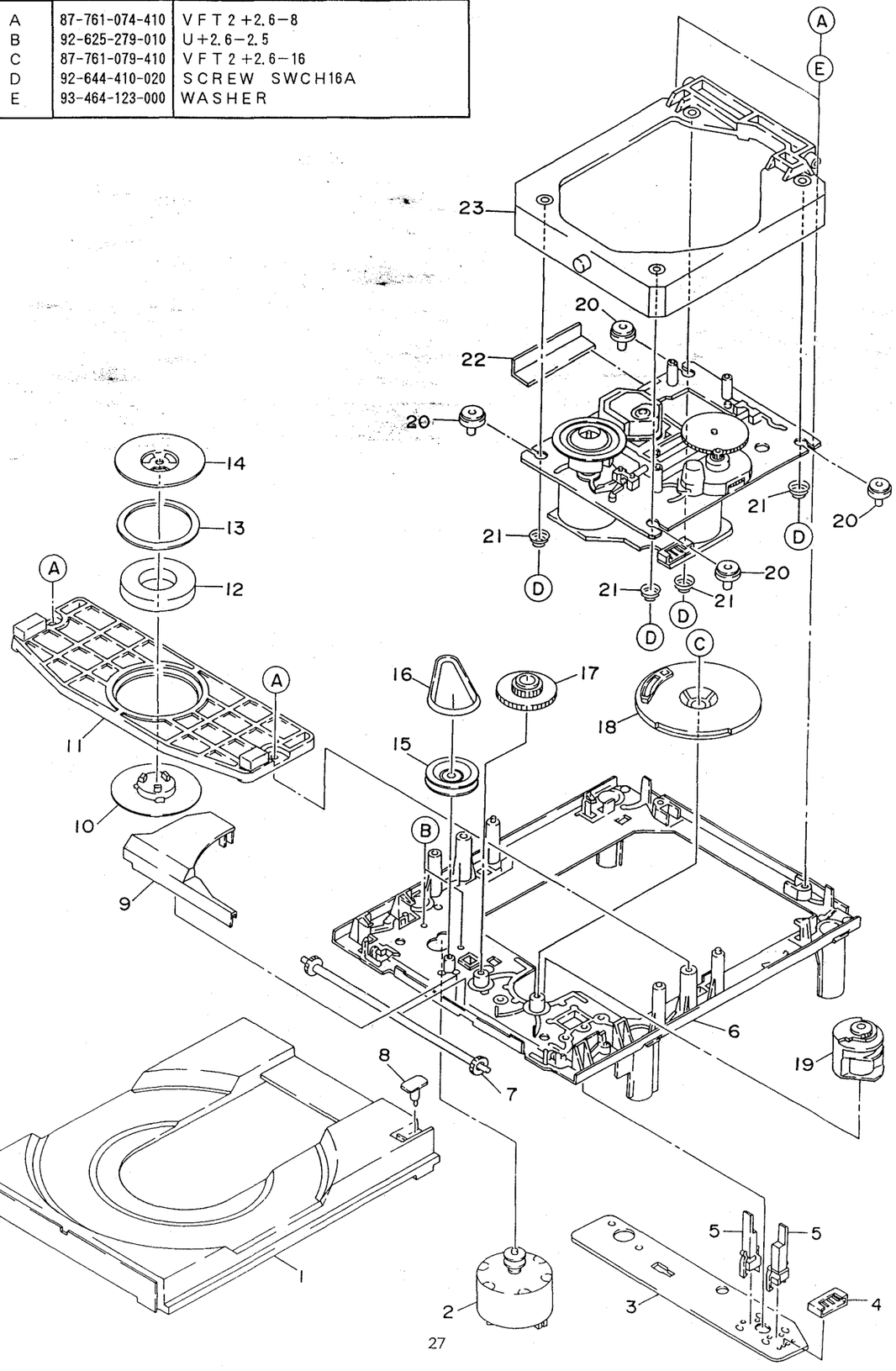


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-1	★81-VX3-001-019	FRONT CABINET (Z92)	※	1
	1-1	★81-VX1-001-019	FRONT CABINET (Z87)	※	1
	1-2	★81-VX1-003-019	WINDOW,CD	※	1
	1-3	★81-MK1-006-019	BADGE,AIWA		1
	1-4	★81-VW1-201-019	FELT		4
	1-5	★81-VW1-015-010	RING,FOOT		2
	1-6	★81-VX1-007-019	KEY,10	※	1
	1-7	★81-VX1-006-019	KEY,POWER	※	1
	1-8	★81-VX1-008-019	KEY,PLAY	※	1
	1-9	---	CHASSIS,MAIN		1
	1-10	★81-VX1-012-019	FOOT,REAR	※	2
	1-11	---	HOLDER,MECHANISM		4
	1-12	★81-VX3-013-019	PANEL,REAR (Z92 H)	※	1
	1-12	★81-VX3-019-019	PANEL,REAR (Z92 HJ)	※	1
	1-12	★81-VX3-015-019	PANEL,REAR (Z92 E)	※	1
	1-12	★81-VX3-016-019	PANEL,REAR (Z92 K)	※	1
	1-12	★81-VX1-009-019	PANEL,REAR (Z87 Y)	※	1
	1-12	★81-VX1-020-019	PANEL,REAR (Z87 YJ)	※	1
	1-12	★81-VX1-022-019	PANEL,REAR (Z87 YNE)	※	1
	1-12	★81-VX1-010-019	PANEL,REAR (Z87 YK)	※	1
	1-13	★87-084-063-019	RIVET,NYLON3-5.5 (Z92 H)		2
	1-14	★87-085-185-010	BUSHING,AC CORD (Z92 H,E,K)		1
	1-14	★87-085-184-010	BUSHING,AC CORD (Z92 HJ)		1
	1-15	★82-187-797-019	CORD,AC (Z92 H)		1
	1-15	★87-034-749-019	CORD,AC (Z92 HJ)		1
	1-15	★87-034-781-018	CORD,AC (Z92 E)		1
	1-15	★87-034-592-018	CORD,AC (Z92 K)		1
	1-16	★89-VT5-202-010	BUSHING,CORD (Z92)		1
	1-17	★89-VX5-618-010	CABLE,FLAT 11P (Z92)		1
	1-18	---	BINDER,WIRE (Z92)		1
	1-19	★81-VX1-005-019	PANEL,TRAY	※	1
	1-20	★81-690-011-019	FILTER,TU		1
	1-21	★80-VX1-202-010	GUIDE,FL		1
	1-22	---	PLATE,EARTH		1
	1-23	---	HEAT SINK		2
	1-24	★81-666-015-110	CABINET,STEEL (Z92 H,Z87 Y)		1
	1-24	★81-692-027-018	CABINET,STEEL (Z92 E,K Z87 YNE,YK)		1
	1-25	★82-180-251-019	SHEET,PVC (Z92 H,E,K)		1

EXPLODED VIEW – 2

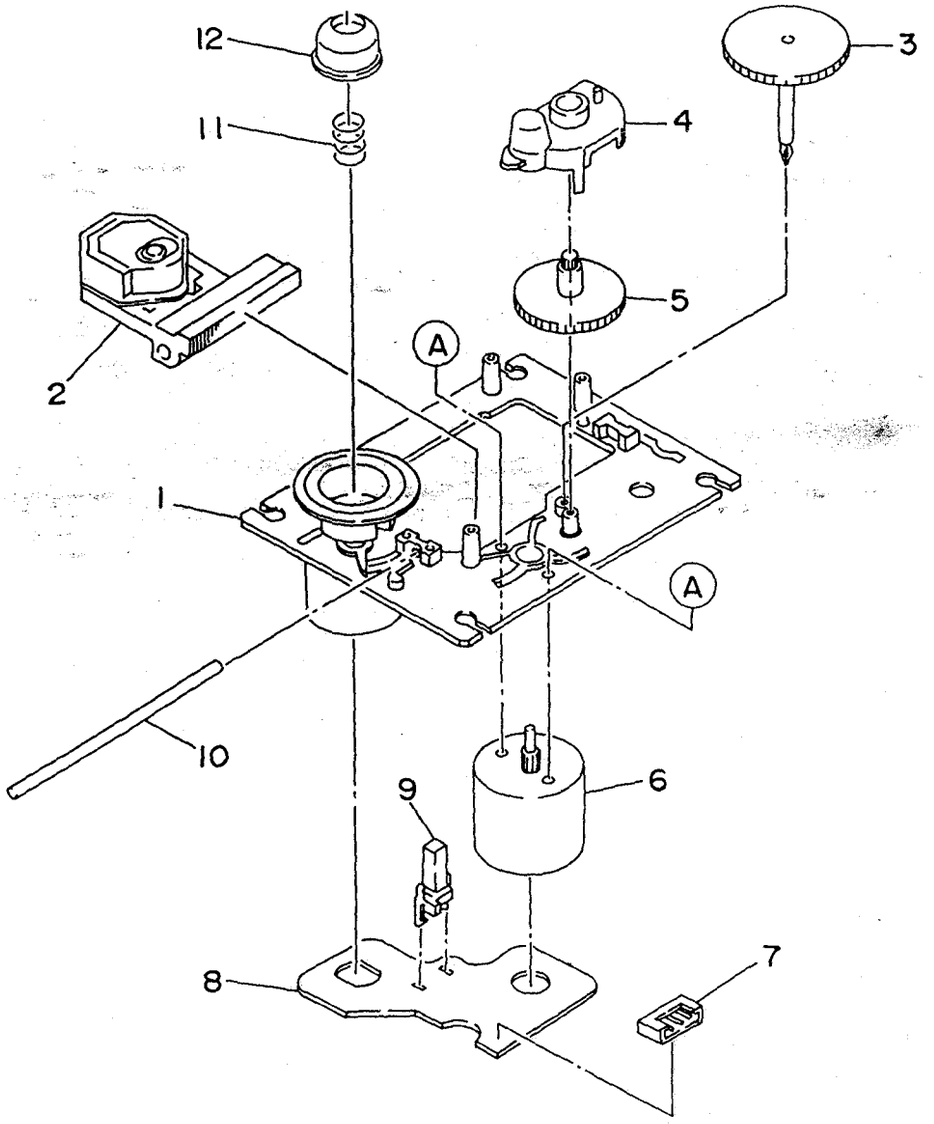
REF. NO.	PART NO.	DESCRIPTION
A	87-761-074-410	VFT 2 +2.6–8
B	92-625-279-010	U+2.6–2.5
C	87-761-079-410	VFT 2 +2.6–16
D	92-644-410-020	SCREW SWCH16A
E	93-464-123-000	WASHER



ART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	2-1	★92-625-288-010	TRAY		1
	2-2	★9X-262-511-710	LOUDING MOTOR ASSY		1
	2-3	---	PWB,LOADING		1
	2-4	★91-564-721-110	CONNECTOR 5P		1
	2-5	91-572-086-110	SWITCH,LEAF		2
	2-6	★92-625-290-010	CHASSIS,MAIN		1
	2-7	★92-625-275-030	GEAR,TRAY		1
	2-8	---	SW PIN		1
	2-9	★92-625-282-020	COVER,GEAR		1
	2-10	★92-625-286-030	PULLEY,CHUCKING		1
	2-11	★92-625-284-010	PLATE,CHUCKING		1
	2-12	★91-452-493-210	MAGNET		1
	2-13	★92-625-541-010	DAMPER		1
	2-14	★92-625-277-010	YOKE,CHUCK		1
	2-15	★92-625-276-010	PULLEY,LOADING		1
	2-16	★93-653-387-000	BELT,LM		1
	2-17	★92-625-274-010	GEAR,MEDDLE		1
	2-18	★92-625-285-030	GEAR,DRIVE		1
	2-19	★92-625-283-020	CAM,CONTROL		1
	2-20	★92-625-278-010	INSULATOR		4
	2-21	★92-625-280-010	SPRING		4
	2-22	---	PLATE,PUSH		1
	2-23	★9X-262-511-610	SUB CHASSIS ASSY W/INSU SHAFT		1

EXPLODED VIEW – 3

REF. NO.	PART NO.	DESCRIPTION
A	87-261-032-210	V+2-3



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	3-1	★9X-262-513-310	T.T CHASSIS ASSY W/MOTOR		1
	3-2	98-848-127-110	PICK UP KSS-210A		1
	3-3	★92-625-188-020	GEAR,A		1
	3-4	★92-625-544-010	COVER		1
	3-5	---	GEAR,B		1
	3-6	★9X-262-513-210	SLED MOTOR ASSY		1
	3-7	★91-564-722-110	CONNECTOR 6P		1
	3-8	---	PWB,MOTOR		1
	3-9	91-572-085-110	SWITCH,LEAF LIMIT		1
	3-10	★94-917-565-010	SHAFT,SLED		1
	3-11	★92-625-191-010	SPRING,COMPRESSION		1
	3-12	★92-625-187-010	RING,CENTER		1